

# **Oak Ridge Institute for Science and Education**

## **Status of Known Vulnerabilities**

### **I. Executive Summary**

The Oak Ridge Institute for Science and Education (ORISE) was established by the Department of Energy to undertake national and international programs in education, training, health, and the environment. ORISE and its programs are operated by Oak Ridge Associated Universities (ORAU) through a management and operating contract. Established in 1946, ORAU is a consortium of 88 colleges and universities. ORISE operates in eight locations in Oak Ridge and an office in Washington, D.C. ORISE also has staff in Colorado, Maryland, New Jersey, New Mexico, New York, Ohio, South Carolina, and Virginia. Sites include mostly office style settings with laboratory style setting only at its Scarboro, Vance Road, Lab Road, and Warehouse locations within Oak Ridge. All laboratory operations are used only for research, teaching, or environmental analysis. Chemical and radiological constituents are only held in laboratory quantity amounts.

### **II. Status of Vulnerability**

#### **A. Chemical Vulnerability**

As stated previously, all chemicals are stored or handled in laboratory quantities only. ORISE does not have processes which require large amounts of chemical substances. Laboratories which use chemicals for research or analysis store only those amounts which will be used on a daily basis, with reserve amounts stored in a common storage facility within each location. These storage rooms are equipped with devices such as flammable liquids and acid storage cabinets which are appropriately vented to the outside of the building to reduce vapor concentration buildup. The areas are supplied with a sprinkler system for fire suppression. All chemical storage rooms are controlled by the department supervisor and the ORISE Chemical Hygiene Officer. Inventories are performed on a quarterly basis with a computerized chemical management inventory system. This provides true cradle-to-grave processing of the chemical. Waste chemicals are transferred to a separate building at the Scarboro site which is equipped for the storage and handling of chemical wastes. All laboratories and storage facilities comply fully with the Hazard Communication Program and RCRA regulations, along with applicable National Fire Protection Association recommendations for storage. Personnel from the ORISE Safety & Environmental Protection Department plus selected individuals throughout the divisions are trained according to OSHA Standard 29 CFR 1910.120(g).

B. Highly Enriched Uranium Vulnerability

ORISE possesses two discreet pieces of highly enriched uranium. Source number 120 is identified as a 688 gram metal plate of 94% enriched uranium. Source number 1102 is described as a 22 gram uranium disc encased in Lucite enriched to 94%. These sources are used only for demonstration and training purposes. Both items are carried on our nuclear materials inventory and are access controlled. The control of these sources are maintained by the Facility Source Custodian plus the ORISE Radiation Safety Officer.

C. Plutonium Vulnerability

ORISE currently possesses one Plutonium 238/ Be neutron calibration source. The current mass is 0.034 grams and is identified as source number 209. The source is located at building 2715-F at ORISE's Laboratory Road complex. This source is used only for demonstration and training purposes and is controlled by the Facility Source Custodian plus the ORISE Radiation Safety Officer.

III. Other Known Vulnerabilities

The only other potential vulnerability currently held by ORISE is a Californium-252 source located at the Environmental laboratory on Laboratory Road. The source is encapsulated in a welded stainless steel cylinder and is maintained in a locked room within a locked building. Key access is strictly controlled by the Facility Source Custodian and the ORISE Radiation Safety Officer. Current dose rate of the source is approximately 1/40th of its original rate and is calculated at 1756 micrograms. This source is maintained for the purpose of training only.

IV. Lessons Learned and Occurrence Reporting

Outgoing information is characterized in accordance with DOE Order 232.1-1A. The information is compiled by the Occurrence Reporting Officer in the ORISE Safety & Environmental Protection Department, reviewed by the Facility Manager and transmitted through the system.